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PRE-APPEAL BRIEF REQUEST FOR REVIEW

Docket Number (Optional): 54008.8080.US00 (P01-0007)

I hereby certify that this correspondence is being deposited with the United States Postal Service with sufficient postage as first class mail in an envelope addressed to "Mail Stop AF, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450" [37 CFR 1.8(a)]

on October 26, 2005

Signature Debbie Gilbert

Typed or printed name Debbie Gilbert

Application Number	Filed
10/051,860	01-16-2002

First Named Inventor: Eric Bergman

Art Unit	Examiner
1746	Frankie L. Stinson

Applicant requests review of the final rejection in the above-identified application. No amendments are being filed with this request.

This request is being filed with a notice of appeal.

The review is requested for the reason(s) stated on the attached sheet(s).
Note: No more than five (5) pages may be provided.

I am the

- ☐ applicant/inventor.
- ☐ assignee of record of the entire interest. See 37 CFR 3.71. Statement under 37 CFR 3.73(b) is enclosed. (Form PTO/SB/96)
- ☑ attorney or agent of record. Registration number 31,646
- ☐ attorney or agent acting under 37 CFR 1.34. Registration number if acting under 37 CFR 1.34 _____

Kenneth H. Ohriner
Signature

Kenneth H. Ohriner
Typed or printed name

(310) 788-9900
Telephone number

Oct. 26, 2005
Date

NOTE: Signatures of all the inventors or assignees of record of the entire interest or their representative(s) are required. Submit multiple forms if more than one signature is required, see below*.

☑ *Total of 1 forms are submitted.

PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

IN RE APPLICATION OF: Eric BERGMAN	EXAMINER: FRANKIE L. STINSON
APPLICATION NO.: 10/051,860	ART UNIT: 1746
FILED: JANUARY 16, 2002	CONF. NO: 1640
FOR: **PROCESSING A WORKPIECE USING OZONE AND SONIC ENERGY**	

PRE-APPEAL BRIEF

REASONS FOR REQUEST FOR REVIEW

Mail Stop AF
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

In reply to the Final Office Action mailed on 07/28/2005, Applicant submits the following reasons for review.

REASONS

The principal reference Torek *et al.*, USP 6,758,938, describes use of a spray of liquid. See Fig. 3; col. 2, line 12; col. 4, line 35; col. 6, lines 49-65; or use of a "spray lid 25." Col. 7, lines 14-16. No other form of liquid outlet is described. Ultrasonic waves can only travel through incompressible media, i.e., solids or a continuous body of liquid. The spray disclosed in Torek *et al.* is a stream of liquid droplets in air. A spray cannot transmit ultrasonic waves. Consequently, since

Torek *et al.* only discloses spraying, Torek *et al.* teaches away from use of sonic energy, as claimed.

The Examiner's statement at paragraph 4 of the Final Office Action is literally correct in that Torek *et al.* does not mention "droplets." But clearly, the spray disclosed in Torek *et al.* is necessarily a stream of droplets, since that is what a person of ordinary skill in this art would readily understand the "spray" to mean. Indeed, Fig. 3 in Torek *et al.* even shows spray droplets.

The pulsing spray process 10 (col. 4, lines 9-20), which is apparently used in all of the embodiments in Torek *et al.*, is also not consistent with use of ultrasonics. With an e.g., 20% duty cycle (col. 5, line 11), the ultrasonics would necessarily be inactive %80 of the time. Moreover, apart from these important conceptual differences, in the apparatus described by Torek *et al.*, there does not appear to be any reasonable way to use ultrasonics, as claimed, since the Torek *et al.* apparatus is a batch system (as opposed to the single workpiece system of claim 16).

Torek *et al.* also shows the spray nozzles 75 spaced apart from the wafers. Fig. 3 suggests the spacing is several centimeters. This also teaches away from use of ultrasonics, as claimed, since this spacing is not consistent with having a fluid link (see 0007) for transmitting ultrasonic energy to the workpiece. The ozone shower system of Torek *et al.* (col. 2, line 61 et seq. and Fig. 3) also suggests spraying the edges of the wafer, rather than the wafer face. This suggestion also teaches away from use of sonic energy, as claimed.

Use of sonic energy has also historically been excluded from ozone processes. Ozone processes have largely relied on dissolved ozone. Sonic energy

or ultrasonics tends to cause ozone to come out of solution, reducing the ozone concentration in the liquid. This reduces the effectiveness of the process. For this reason, ozone and sonic energy have essentially not been used together. Claim 1 involves ozone contacting the wafer via diffusion and/or entrainment of ozone gas, as opposed to the using ozone dissolved in water. Hence, use of ultrasonics in the claimed apparatus increases, rather than decreases, the effectiveness of process.

Torek *et al.* is applied against claims in paragraph 2 of the Final Office Action for showing all of the claimed elements, except ozone. All of the four secondary references applied at paragraph 2, except Miki *et al.*, disclose ultrasonics, but not ozone, consistent with the historical mutual exclusivity of these steps in semiconductor wafer processing. Miki *et al.* discloses both ultrasonics and dissolved ozone in water. However, a careful reading of Miki *et al.* shows that ultrasonics and ozone are only used separately. Fig. 8 in Miki *et al.* shows the "normal temperature washing apparatus." While the other process liquids in Fig. 8 are directed to the oscillators, the ozone water clearly is not. Fig. 9 in Miki *et al.* shows the ozone injection system, which has no ultrasonic elements. The point that ultrasonics and ozone are not used together is even clearer at col. 10, lines 10-32. As described there, use of ozonated water is halted, and then ultrasonics is applied.

In view of the foregoing, it is submitted that the claims are patentable over the prior art. A Notice of Allowance is therefore requested.